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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/517,506	12/10/2004	Pekka Hanniala	6009-4733	1284
27123	7590	08/07/2007		
MORGAN & FINNEGAN, L.L.P. 3 WORLD FINANCIAL CENTER NEW YORK, NY 10281-2101			EXAMINER YANG, JIE	
			ART UNIT 1709	PAPER NUMBER
			MAIL DATE 08/07/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<p align="center">Office Action Summary</p>	<p>Application No.</p> <p align="center">10/517,506</p>	<p>Applicant(s)</p> <p align="center">HANNIALA ET AL.</p>	
	<p>Examiner</p> <p align="center">Jie Yang</p>	<p>Art Unit</p> <p align="center">1709</p>	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/10/2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/10/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Acknowledge of the receipt of "applicant argument/remark" and "preliminary amendment" filed on 12/10/2004. Claims 1-8 are amended from original claims 1-8, and Claims 1-8 are pending in application.

Claim Objections

Claims 1-8 are objected to because of the following informalities:

Regard to claims 1-8, an oxygen potential within the range of "10.E - 10-6" is recognized as typographic error. According the discussion in specification (page 3, 3rd paragraph), the oxygen potential within the range of "10⁻⁷ - 10⁻⁶". Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regard to statement: "A method according to claim 5, wherein into the oxidizing reactor, there also is injected solid white metal", it can be interpreted as "white metal is put into oxidizing reactor by injected method" or "white metal is put into oxidizing reactor then is injected". Because it is a method claim, it is important to clarify this detail step. According to specification of instant invention, solid white metal can

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advantageously be melted by injecting it into the melt together with the oxidizing gas in the oxidizing reactor (Page 5, Line 20-24 of instant invention). It supports the second interpretation. For examination purpose, claim 6 is interpreted as "white metal is put into oxidizing reactor then is injected".

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Yannopoulos (U.S 4,470,845, thereafter '845).

Regard claim 1, '845 teaches a process for continuous copper smelting, slag conversion, and production of blister copper in a furnace by enriched oxygen containing gas injection (Abstract and col.1, Line 5-11). Flash smelting technique – dry charge is blown into the flash furnaces (Col. 2, line 25-39) is adopted '845 smelting process. '845 teaches: " A charge is composed of dry, fine concentrate and ground secondaries, i.e. copper-rich slag concentrates and fluxes. This charge is injected with oxygen into the furnace through a number of oxy-concentrate (oxygen-concentrate) burners..." (Col.1, line 12-25). '845 teaches slag and matte were formed in smelting section I (Col.6, Line 14-40) and in slag converting section II (Col.6, line 62 - Col.7, Line 2). After converting section II, enriched matte, such as containing from 74 to 78% of copper (white metal

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- refer to instant invention page 1, second paragraph) had formed (Col.6, line 62 - Col.7, Line 2).

Regard to the limitation of "at least one oxidizing reactor; and "installing the oxidizing reactor in connection with the flash smelting furnace", '845 teaches: Oxygen is injected via lances 4, through the furnace A or B (refer to fig. 1 and 10 of '845). A number of flux lances are used to inject ground silica flux with oxygen into converting section II (Col.6, Line 41 to 52). Fig. 1 and 10 of '845 clearly showed the oxidizing reactor is in connection with the flash smelting furnace.

Regard to the limitation of "...providing an oxygen potential within the range of 10^{-7} - 10^{-6} and sulfur dioxide partial pressure within the range of 0.2-1 in the flash smelting furnace...", '845 presents equilibrium curves of each of the main converting reactions as a function of partial pressure of oxygen versus temperature ($P_{SO_2} = 1$; refer to fig.11 of '845). This equilibrium curves covers the oxygen partial pressure range which recited in instant claim at test temperature (for example, 1300°C). Examiner also notes applicants choose experiment parameters according to Fig.1 (INSKO 261608 VII, page 9), Sulfur-oxygen potential diagram for a CU-Fe-S-O-SiO₂ system at the temperature 1300 °C (Page 2, 2nd paragraph of instant invention).

Concluding the above discussions, claim 1 is anticipated by '845.

Regard to claim 2, which depended on claim 1. As discussed in rejection for the claim 1, '845 showed the oxidizing reactor is physically in connection with the flash smelting furnace in

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Fig. 1 and 10 of '845. This connection is a stationary fashion. Claim 2 is anticipated by '845.

Regard to claim 3, which depended on claim 1. As discussed in rejection for the claim 1, '845 teaches: in oxidizing reactor, oxygen is injected via lances and lances is a kind of melt launder. Claim 3 is anticipated by '845.

Regard to claims 4 and 5, which depended on claim 1. Refer to the Fig. 1 and 10 of '845, lances 4 are arranged as surface blasting reactor and they are injection reactors (Col.6, Line 41-52). Claims 4 and 5 are anticipated by '845.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over '845 as applied on claim 1-5, in view of Reist et al (U.S 5,007,959, thereafter '959).

Regard to claim 6, which depended on claim 1. '845 teaches the limitation of the claim 1, but '845 does not explicitly teach "...oxidizing reactor, there also is injected solid white metal." According to specification of instant invention, solid white metal can advantageously be melted by injecting it into the melt together with the oxidizing gas in the oxidizing reactor (Page 5, Line 20-24 of instant invention). '959 teaches a method for producing blister copper by converting of solid

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copper matte, and concerned with the treatment of solid, high-grade smelting furnace matte or a similar copper sulphide such as white metal (Col.1, Line 5-10 of '959). '959 also teaches: oxygen injectors in place of the usual convert tuyeres to reject the solid copper matte (Col.2, Line 4-32, also refer to Fig.1 and 2 of '959). '959 uses similar converting unit--oxygen injection reactor as discussed above to producing blister copper by injecting oxygen (oxygen-enriched air) flow. Therefore, it would have been obvious to one of ordinary skill in the art to inject solid white metal into the melt together with the oxidizing gas in the oxidizing reactor as demonstrated in '033 to overcome the problems in conventional converters, for example, the off-gas produced from the vessel is limited and discontinuous off-gas stream (Col.1, Line 37-60) in the process of '845. Refer to the rejection for claim 1, claim 6 is rendered obvious by above references.

Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over '845 as applied on claim 1-5, in view of Poijarvi et al (U.S 6,761,749 B1, thereafter '749).

Regard to claims 7 and 8, which depended on claim 1. '845 teaches the limitation of the claim 1, but '845 does not explicitly teach: after suspension smelting furnace, the slag is treated "in an electric furnace" or "in floatation" in order to recover the copper content thereof. '749 relates to a method of producing blister copper in a suspension reactor. '749 teaches The slags are treated further in single-stage or preferably two-stage slag cleaning. The two-stage cleaning method includes either two electric furnaces or an electric furnace and a slag concentrating plant (Col.2, Line 37-47). The slag is

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concentrated by flotation in a slag concentration plant (Col.3, Line 48-56). Compared with instant invention, '749 uses similar smelter unit (Col.2, Line 48-59) to producing blister copper. Therefore, it would have been obvious to one of ordinary skill in the art to choose electric furnace and/or flotation plant to increase the concentration of Cu content in slag (Col.4, line 36-51 of '749) in the process of '845. Refer to the rejection for claim 1, claims 7 and 8 are rendered obvious by above references.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure of Andersson (U.S 4,528,033), which indicated the similar method where methods for producing blister copper.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jie Yang whose telephone number is 571-270-1884.

The examiner can normally be reached on M-F, 7:30-5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on 571-272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

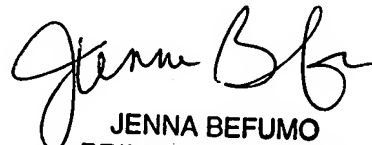
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JY

(JY)


JENNA BEFUMO
PRIMARY EXAMINER